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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,474	06/30/2000	Chuanyou Dong	6009-035	2236

36257 7590 02/25/2004

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EXAMINER	
DO, CHAT C	

ART UNIT	PAPER NUMBER
2124	10

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/608,474	DONG, CHUANYOU	
	Examiner	Art Unit	
	Chat C. Do	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Reconsideration, filed 12/5/2003.

2. Claims 1-15 are pending in this applications. Claims 1, 6, and 11 are independent claims. This action is made non-final after a filed Request for Continued Examination.

Claim Objections

3. Claims 1, 6, and 11 are objected to because of the following informalities:

In claims 1, 6, and 11, the term "LSB" must be defined at least once as "least significant bit" for clarification.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being obvious over Karanovic (U.S. 6,301,596) in view of Abt et al. (U.S. 4,965,668).

Re claim 1, Karanovic discloses a method in Figure 1 for adjusting a noise floor (col. 5 lines 7-13) of a filtered signal (col. 1 lines 26-30) for low frequencies comprising:

providing a digital signal having M bits (M in present invention = M+N in Karanovic

invention) that has been digitally filtered wherein M is a selected positive number; adding (40) a supplement signal (34) to the M-bit filtered signal (22) to produce a modified filtered signal (output of adder); and removing (col. 3 lines 6-9) L LSB bits from the modified filtered signal to produce a dithered filtered signal where L is a selected positive number satisfying L+1 <= M (K and 50). Karanovic discloses a random number generator to add the filtered data (30 and col. 2 lines 51-55), but Karanovic does not disclose an Exclusive OR product of N LSB bits of the M-bit filtered signal to provide a one-bit supplement signal where N is a selected positive number that satisfying N+1 <= M. However, Abt et al. disclose in Figures 2 and 7 an Exclusive OR product of N LSB bits (t bits) of the M-bit filtered signal (m bits) to provide a one-bit supplement signal (input into 12 as t+1<= m). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to include an Exclusive OR product of N LSB bits of the M-bit filtered signal to provide a one-bit supplement signal as seen in Abt et al.'s invention into Karanovic's invention because it would help to randomize the correlated error and reduces its effect while truncating/rounding off the output signals (col. 1 lines 20-25).

Re claim 2, Karanovic further discloses M is 30 (M+N = 30).

Re claim 3, Karanovic further discloses N is 16 (R = 16).

Re claim 4, Karanovic further discloses L is in a range 1<= L <=16 (1 <= M <= 16).

Re claim 5, Karanovic further discloses filtered signal is an FIR-filtered signal (col. 1 lines 26-30).

Re claim 6, it is a system claim of claim 1. Thus, claim 6 is also rejected under the same rationale in the rejection of the rejected claim 1.

Re claim 7, it is a system claim of claim 2. Thus, claim 7 is also rejected under the same rationale in the rejection of the rejected claim 2.

Re claim 8, it is a system claim of claim 3. Thus, claim 8 is also rejected under the same rationale in the rejection of the rejected claim 3.

Re claim 9, it is a system claim of claim 4. Thus, claim 9 is also rejected under the same rationale in the rejection of the rejected claim 4.

Re claim 10, it is a system claim of claim 5. Thus, claim 10 is also rejected under the same rationale in the rejection of the rejected claim 5.

Re claim 11, it is a article claim of claim 1. Thus, claim 11 is also rejected under the same rationale in the rejection of the rejected claim 1.

Re claim 12, it is a article claim of claim 2. Thus, claim 12 is also rejected under the same rationale in the rejection of the rejected claim 2.

Re claim 13, it is a article claim of claim 3. Thus, claim 13 is also rejected under the same rationale in the rejection of the rejected claim 3.

Re claim 14, it is a article claim of claim 4. Thus, claim 14 is also rejected under the same rationale in the rejection of the rejected claim 4.

Re claim 15, it is a article claim of claim 5. Thus, claim 15 is also rejected under the same rationale in the rejection of the rejected claim 5.

6. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being obvious over Abt et al. (U.S. 4,965,668) in view of Karanovic (U.S. 6,301,596).

Re claims 1 and 5, Abt et al. disclose a method in Figures 2 and 7 for adjusting a noise floor of a filtered signal for low frequencies comprising: providing a digital signal having M bits (x(n) with m bits into 12 in Figure 2); an Exclusive OR product (Figure 7) of N LSB bits (t bits) of the M-bit filtered signal (m bits) to provide a one-bit supplement signal where N is a selected positive number that satisfying N+1 <= M (t+1 <= m or m-t >= 1); adding (12) a supplement signal to the M-bit filtered signal to produce a modified filtered signal (output 12); and removing (18) L LSB bits from the modified filtered signal to produce a dithered filtered signal where L is a selected positive number satisfying L+1 <= M (L = m-t as y(n)). Abt et al. do not disclose the input signal has been digitally filtered. However, it is known in the art as seen in Karanovic's invention that the input signal has been digitally filtered (output 24 in Figure 1 and col. 1 lines 26-30). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to include add a digital filter for input signal as seen in Karanovic's invention into Abt et al.'s invention because it would enable to manipulate easily the input signal at low frequency by passing through a low-pass filter.

Re claim 2, Abt et al. further disclose M is 30 (m = 30).

Re claim 3, Abt et al. further disclose N is 16 (t = 16).

Re claim 4, Abt et al. further disclose L is in a range 1<= L <=16 (1 <= t <= 16).

Re claims 6 and 10, they are system claims of claims 1 and 5. Thus, claims 6 and 10 are also rejected under the same rationale in the rejection of the rejected claims 1 and 5.

Re claim 7, it is a system claim of claim 2. Thus, claim 7 is also rejected under the same rationale in the rejection of the rejected claim 2.

Re claim 8, it is a system claim of claim 3. Thus, claim 8 is also rejected under the same rationale in the rejection of the rejected claim 3.

Re claim 9, it is a system claim of claim 4. Thus, claim 9 is also rejected under the same rationale in the rejection of the rejected claim 4.

Re claims 11 and 15, they are article claims of claims 1 and 5. Thus, claims 11 and 15 are also rejected under the same rationale in the rejection of the rejected claims 1 and 5.

Re claim 12, it is a article claim of claim 2. Thus, claim 12 is also rejected under the same rationale in the rejection of the rejected claim 2.

Re claim 13, it is a article claim of claim 3. Thus, claim 13 is also rejected under the same rationale in the rejection of the rejected claim 3.

Re claim 14, it is a article claim of claim 4. Thus, claim 14 is also rejected under the same rationale in the rejection of the rejected claim 4.

Response to Arguments

7. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. Patent No. 5,740,091 to Fukui et al. disclose an IIR type digital filter.

b. U.S. Patent No. 5,903,482 to Iwamura et al. disclose a sampling frequency converting system and a method thereof.

c. U.S. Patent No. 6,337,643 to Gabet et al. disclose a method and device for generating a random signal and digital-to-analog converting system using same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do

Examiner
Art Unit 2124

February 17, 2004

KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100